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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,853	08/19/2003	David Y. Chien	2302-16073.10 (PP16073.02	6313

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EXAMINER	
LUCAS, ZACHARIAH	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/643,853	CHIEN ET AL.	
	Examiner	Art Unit	
	Zachariah Lucas	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2006*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *47-49,51,52,54,55 and 57-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *49,52,55,58 and 60* is/are allowed.

6)☒ Claim(s) *48,51,54,57 and 59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 47-49, 51, 52, 54, 55, and 57-60 are pending in the application.

2. In the prior action, mailed on June 9, 2006, claims 47-58 were pending and under consideration. In the Response of September 8, 2006, claims 48, 49, 54, and 55 were amended; claims 47, 50, 53, and 56 were cancelled; and claims 59 and 60 were added.

Specification

3. In the prior action, the Title and Abstract of the application were objected to. In view of the amendments thereto, the objections are withdrawn.

Claim Objections

4. **(Prior Objection- Withdrawn)** Claims 47-49 were objected to because of the following informalities: the claims refer to figures in the application. In view of the amendment of the claims, the objection is withdrawn.

Claim Rejections - 35 USC § 101

5. **(Prior Rejection- Withdrawn)** Claims 53-58 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because they read on "A host cell." In view of the amendments to the claims, the rejection is withdrawn.

Claim Rejections - 35 USC § 112

6. **(Prior Rejection- Withdrawn)** Claims 49, 52, 55, and 58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for referring to the amino acid sequence of Figures 5A-5F of the application. In view of the amendment of the claims, the rejection is withdrawn.

7. **(Prior Rejection- Withdrawn)** Claims 47, 48, 50, 51, 53, 54, 56, and 57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite because it was unclear if the antibodies referred to in the claims were required to react with any portion of the multiple epitope fusion antigen comprising the indicated sequence, or if the claims are requiring that the antibodies react specifically with a portion of the MEFA sequence within the sequence of SEQ ID NO: 4. In view of the amendments to the claims, the rejection is withdrawn.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. **(Prior Rejection- Maintained)** Claims 47, 48, 50, 51, 53, 54, 56, and 57 were rejected under 35 U.S.C. 112, first paragraph, as failing to provide adequate written description support for the claimed genus of polynucleotides encoding fusion proteins comprising any sequence with at least 80% or 90% identity to the fusion protein of SEQ ID NO: 5 and which are able to bind to anti-HCV antibodies. The rejection is withdrawn from cancelled claims 47, 50, 53, and 56; and maintained over claims 48, 51, 54, 57, and new claim 59.

These claims were rejected on the basis that there is insufficient written description support for modified sequences of SEQ ID NO: 5 (and therefore for polynucleotides that encode it) that are able to bind to anti-HCV antibodies. While the Applicant may have adequate descriptive support for the multiple epitope protein of SEQ ID NO: 5 (as described in Figure 7, and page 30 Table 2 of the application) or for proteins comprising the a multiple epitope comprising equivalent HCV antigenic determinants, the application does not provide adequate support for any sequence comprising any modifications such that a protein of at least 80 or 90% identity is achieved which proteins retains the ability to bind to anti-HCV antibodies.

In traversal of the rejection, the Applicant asserts that their provision of the sequence of SEQ ID NO: 5, coupled with conventional methods of aligning polypeptides of polynucleotides, and methods of testing for antibody binding provide support for the claimed invention. See e.g., Response, page 10. However, the Applicant also notes that determining if written description has been met is a fact-dependent determination. Page 8. In the prior action, the Examiner set forth evidence indicating that those in the art would not have considered the Applicant to be in possession of the full scope of the genus claimed. For example, evidence was provided indicating uncertainty in the art. Further, it is also noted that the Applicant has not provided any examples of such variants of SEQ ID NO: 5, and that the case law indicates that the ability of those in the art to screen for compounds that meet provided functional limitations does not substitute for description of the compounds themselves. See e.g., University of Rochester v. G.D. Searle & Co., 69 U.S.P.Q.2d 1886, at 1895 (CAFC 2004). As it is not clear what fact pattern was presented in the presentation referred to by the Applicant on page 12 of the Response, and in view of the indications that the ability of those in the art to screen for compounds in the absence

of the disclosure of the claimed compounds, this argument is not found persuasive. The rejection is therefore maintained for the reasons above, and the reasons of record.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. **(Prior Rejection- Maintained)** Claims 47, 48, 50, 51, 53, 54, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valenzuela et al. (WO 97/44469- of record in the August 2003 IDS), in view of the teachings of Chien et al. (Vir Hepat Liver Dis pp 320-24- reference C5 in the August 2003 IDS), Puntoriero et al. (EMBO J 17: 3521-33), and Hartman et al. (U.S. 6,001,604). Claims 47, 50, 53, and 56 have been cancelled from the application. The rejection is withdrawn from these claims. The rejection is maintained against pending claims 48, 51, 54, 57, and extended to new claim 59.

The Applicant traverses the rejection of pending claims 48, 51, 54, and 57 on multiple grounds. Several of these arguments are assertions that individual references do not teach or suggest each of the claim limitations. In response, it is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). These arguments are therefore not found persuasive.

With respect to the teachings of Puntoriero, it is noted that the reference discloses multiple consensus sequences, with the sequence at the top of Figure 1A. See also, Watanabe et al., Virology 264: 153-58 (indicating that the sequence at the top of Figure 1A is the consensus sequence by using it as the basis of comparison for the disclosed HCV sequences). This sequence, as was indicated in the prior action, varies from the HVR1 sequence in SEQ ID NO: 5 by one amino acid in the consensus sequence, and by the presence of an additional four residues in positions 140-143 of SEQ ID NO: 5. Thus, Applicant's argument that the sequence of Puntoriero varies from that of SEQ ID NO: 5 in each of the positions identified is not found persuasive.

With respect to the Hartman reference, it is noted that the Applicant asserts that this reference does not teach the particular truncated SOD sequence used in the antigen of SEQ ID NO: 5. It is first noted that the Examiner nowhere asserted to the contrary. Nonetheless, the reference does teach the use of a truncated SOD sequence as a leader sequence. Because both references teach their respective SOD sequences as leaders, those of ordinary skill in the art would have recognized these sequences as functional equivalents. See e.g., MPEP § 2144.06 (indicating that it is prima facie obvious to substitute functional equivalents, and that an express suggestion to do so by the art is not required). Thus, fact that the reference does not specifically disclose its use for other proteins that insulin is not found persuasive as those in the art would have recognized that the leader sequence used by Hartman would be a functional equivalent for the SOD sequence used by Valenzuela.

Finally, the Applicant also asserts that the Examiner has used improper hindsight, using the claimed invention as a roadmap, to assert that the claimed invention is obvious over the prior

art. This argument is not found persuasive. The rejection is based solely on the teachings of the prior art. If an roadmap has been used, it is the teachings of the Valenzuela reference, which discloses a multiple antigen fusion protein similar to that of the present claims, and teaches that variations may be made to the disclosed embodiments of such proteins. The other cited references merely set forth sequences known to those of ordinary skill in the art as functional equivalents for the epitopes and sequence included in the disclosed embodiments of Valenzuela. Thus, the cumulative teachings of these references identify modifications to the Valenzuela antigens that would have been obvious variations to that protein. Such obvious variants include variants having at least 90% identity to SEQ ID NO: 5 (the sequence encoded by SEQ ID NO: 4).

It is noted that the present rejection has not been extended to SEQ ID NO: 5 itself, but is drawn to the claims insofar as they read on sequences of at least 90% homology thereto. This can be seen from the exclusion of claims 49, 52, 55, and 58 from the rejection. Such a homologous sequence would have been obvious to those of ordinary skill in the art based on the disclosures of the cited references. Thus, the Applicant's arguments that certain of the art references do not teach or suggest the specific sequence found in SEQ ID NO: 5 is not found persuasive as the rejection does not purport to render SEQ ID NO: 5 itself obvious, but only sequences that fall within the scope of sequences that share at least 90% homology thereto.

For these reasons, and for the reasons of record, the rejection is maintained.

Conclusion

12. Claims 49, 52, 55, 58, and 60 appear to be allowable over the prior art.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachariah Lucas whose telephone number is 571-272-0905. The examiner can normally be reached on Monday-Friday, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Z. Lucas
Patent Examiner

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